

## **REMARKS**

Upon entry of the foregoing amendment, claims 1-3, 7-9, 11 and 13-29 will be pending in the application. Claims 4-6, 10 and 12 have been canceled. Claims 7 and 13-29 have been withdrawn from consideration. Claims 1-6 and 8-12 have been rejected.

### **Rejection of Claims 1-6 and 8-12 Under 35 U.S.C. §112**

Claims 1-6 and 8-12 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The Examiner contends that the claims contain subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, the Examiner has stated that an epoxy resin contains at least two epoxy groups per molecule and that the epoxides such as octadecyleneoxide, epichlorohydrin, styrene oxide, vinylcyclohexene oxide and glycidyl methacrylate listed on page 6, line 30 to page 7, line 1 are compounds containing only a single epoxy group. As such, these epoxides do not fall within the art-recognized definition of a resin.

Applicants respectfully disagree with the Examiner's contention. Attached for the Examiner's consideration is a copy of the definitions of the terms "epoxide", "epoxy resin" and "resin" as they appear in Hawley's Condensed Chemical Dictionary, Eleventh Edition, 1987. Neither the definition of "epoxide" nor the definition of "epoxy resin" state that an epoxy resin must contain at least two epoxy groups. Applicants further refer the Examiner to the definition of synthetic resin wherein it is noted that the term "resin" is so broadly used as to be almost meaningless. One skilled in the art would recognize that the term epoxy resin, as recited in claims 1, 9 and 11, means an organic compound characterized by the structure:



Thus, Applicants use of the term epoxy resin covers the epoxides octadecyleneoxide, epichlorohydrin, styrene oxide, vinylcyclohexene oxide and glycidyl methacrylate. Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-3, 8-9 and 11 under 35 U.S.C. §112, first paragraph.

#### Rejection of Claim 12 Under 35 U.S.C. §112

Claim 12 has been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner has stated that claim 12 does not further limit claim 10 from which it depends.

Applicants have canceled claim 12.

#### Rejection of Claims 1, 2, 4-6 and 8-12 Under 35 U.S.C. §102(b)

Claims 1, 2, 4-6 and 8-12 have been rejected under 35 U.S.C. §102(b) as being anticipated by Minamisawa et al. (US 4,500,660). The Examiner has stated that Minamisawa et al. show a composition comprising a diglycidyl ether of bisphenol A, a reaction product of diglycidyl ether of bisphenol A and a carboxyl-terminated butadiene-acrylonitrile copolymer and a carboxyl-modified butadiene-acrylonitrile copolymer.

Claim 1 has been amended to recite that the reactive liquid polymer (b) comprises a carboxyl-terminated butadiene-acrylonitrile copolymer. Claim 1 has also been amended to recite that the epoxy resin of the reaction product (c) comprises a diglycidyl ether of a bisphenol compound. Minamisawa does not disclose a curable composition comprising (a) an epoxy resin, (b) a liquid reactive polymer, and (c) the reaction product of an epoxy resin and a liquid reactive polymer. Rather, Minamasawa discloses a solid reactive polymer, Nipol 1072, which is a carboxyl-modified copolymer of butadiene and acrylonitrile. (See US2004/0214007 at page 5, paragraph [0071], attached for the Examiner's convenience.) Furthermore, Minamasawa does not disclose a curable composition comprising the reaction product of an epoxy resin and a reactive

liquid polymer wherein the epoxy resin comprises a diglycidyl ether of a bisphenol compound as claimed by Applicants. Rather, Minamasawa discloses (at column 7, Example 1) a reaction product of a butadiene-acrylonitrile copolymer and an epoxy resin comprising Araldite MY 720, which is a glycidylamine type epoxy resin. Because Minamasawa does not disclose, teach or suggest the curable composition claimed by Applicants, Applicants respectfully request the withdrawal of the rejection of claims 1, 2, 8-9 and 11 under 35 U.S.C. §102(b).

Rejection of Claims 1-3 and 8-12 Under 35 U.S.C. §102(b)

Claims 1-3 and 8-12 have been rejected under 35 U.S.C. §102(b) as being anticipated by Japanese Patent No. 3-137179 in view of Tzeng (US 4,678,716). The Examiner has stated that JP '179 shows a formulation prepared from a bisphenol A epoxy resin, a CTBN-modified bisphenol A epoxy resin and a liquid polyaminoamide.

Claim 1 has been amended to recite that the reactive liquid polymer (b) comprises a carboxyl-terminated butadiene-acrylonitrile copolymer. JP '179 does not disclose a composition comprising (a) an epoxy resin, (b) a liquid reactive polymer comprising a carboxyl-terminated butadiene-acrylonitrile copolymer and (c) the reaction product of an epoxy and a liquid reactive polymer. Rather, JP '179 discloses a formulation prepared from an epoxy resin, a liquid amino-functional polyamide, specifically, Versamide 125, and the reaction product of an epoxy resin and a reactive polymer. Because JP '179 does not disclose, teach or suggest the curable composition claimed by Applicants, Applicants respectfully request the withdrawal of the rejection of claims 1-3, 8-9 and 11 under 35 U.S.C. §102(b).

Rejection of Claims 1-3 and 8-12 Under 35 U.S.C. §102(b)

Claims 1-3 and 8-12 have been rejected under 35 U.S.C. 102(b) as being anticipated by Siebert et al. (Patent No. 5,280,068) in view of the Stochem technical bulletin. The Examiner has stated that Siebert et al. show a

combination of a diglycidyl ether of bisphenol A, a statistical monofunctional carboxyl, amine or epoxy-terminated reactive liquid polymer such as an epoxy-terminated reactive polymer and Ancamide 501, which is a polyamidoamine liquid.

Claim 1 has been amended to recite that the reactive liquid polymer (b) comprises a carboxyl-terminated butadiene-acrylonitrile copolymer. Siebert et al. do not disclose a composition comprising (a) an epoxy resin, (b) a liquid reactive polymer comprising a carboxyl-terminated butadiene-acrylonitrile copolymer and (c) the reaction product of an epoxy and a liquid reactive polymer. Rather, Siebert et al. disclose a combination of an epoxy resin, a liquid amidoamine-modified amide/imidazoline, specifically, Ancamide 501, and the reaction product of an epoxy and a reactive polymer. Because Siebert et al. do not disclose, teach or suggest the curable composition claimed by Applicants, Applicants respectfully request the withdrawal of the rejection of claims 1-3, 8-9 and 11 under 35 U.S.C. §102(b).

Rejection of Claims 1-5 and 8-12 Under 35 U.S.C. §102(b) or,  
in the Alternative, Under 35 U.S.C. §103(a)

Claims 1-5 and 8-12 have been rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Nakata et al. (US 4,804,710) or Japanese Patent No. 4-145185. The Examiner has stated that Nakata et al. set forth a fiber-reinforced plastic impregnated with a liquid mixture of an epoxy resin such as diglycidyl ether of bisphenol A, a liquid reaction product of the diglycidyl ether of bisphenol A and a carboxyl-terminated butadiene-acrylonitrile copolymer and a urethane-modified epoxy resin. The Examiner has further stated that JP '185 reports a formulation prepared by stirring a blend of bisphenol F epoxy resin, a liquid reaction product of bisphenol epoxy resin and a carboxylated butadiene acrylonitrile rubber, and a urethane-modified epoxy resin. The Examiner contends that the use of the blend as an adhesive sandwiched between steel plates indicates its application as a liquid wherein the components including the urethane-modified epoxy resin are liquids. The Examiner further contends that the claimed reactive liquid polymer (b)

embraces the liquid urethane-modified epoxy resins of Nakata et al. or JP '185 since such resins contain terminal reactive epoxy groups.

Claim 1 has been amended to recite that the reactive liquid polymer (b) comprises a carboxyl-terminated butadiene-acrylonitrile copolymer. With regard to Nakata et al., the formulation disclosed in Examples 1-3 of Table 1 comprises an epoxy resin, a urethane-modified epoxy resin and a BA rubber-modified epoxy resin. Nakata et al. does not disclose a composition comprising (a) an epoxy resin, (b) a liquid reactive polymer comprising a carboxyl-terminated butadiene-acrylonitrile copolymer and (c) the reaction product of an epoxy and a liquid reactive polymer as claimed by Applicants.

With regard to JP '185, there is disclosed a composition comprising (A) a latent curing agent and (B) an epoxy resin component composed of (i) a urethane-modified epoxy resin, (ii) a rubber-modified epoxy resin and (iii) a bisphenol F epoxy resin. JP '185 does not disclose a composition comprising (a) an epoxy resin, (b) a liquid reactive polymer comprising a carboxyl-terminated butadiene-acrylonitrile copolymer and (c) the reaction product of an epoxy and a liquid reactive polymer as claimed by Applicants.

Because neither Nakata et al. nor JP '185 discloses, teaches or suggests the curable composition claimed by Applicants, Applicants respectfully request the withdrawal of the rejection of claims 1-3, 8-9 and 11 under 35 U.S.C. §102(b), or in the alternative, under 35 U.S.C. §103(a).

#### Rejection of Claims 1-3 and 8-12 Under 35 U.S.C. §102(e)

Claims 1-3 and 8-12 have been rejected under 35 U.S.C. §102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Schenkel (US 6,776,869). The Examiner has stated that Shenkel espouses a formulation utilized as liquid highly viscous adhesives comprising a diglycidyl ether of bisphenol A, a liquid reaction product of the diglycidyl ether of bisphenol A and CTBN, and a phenolic- or amino-terminated polyurethane prepolymer. The Examiner contends that the presence of phenolic or amino reactive groups

in the polyurethane prepolymer of Schenkel conforms to the claimed reactive liquid polymer (b).

Claim 1 has been amended to recite that the reactive liquid polymer (b) comprises a carboxyl-terminated butadiene-acrylonitrile copolymer. Schenkel does not disclose a composition comprising (a) an epoxy resin, (b) a liquid reactive polymer comprising a carboxyl-terminated butadiene-acrylonitrile copolymer and (c) the reaction product of an epoxy and a liquid reactive polymer. Rather, Schenkel discloses a combination of an epoxy resin, a phenolic- or amino-terminated polyurethane prepolymer, and the reaction product of an epoxy and a reactive polymer. Because Schenkel does not disclose, teach or suggest the curable composition claimed by Applicants, Applicants respectfully request the withdrawal of the rejection of claims 1-3, 8-9 and 11 under 35 U.S.C. §102(e).

#### Rejection of Claims 1-6 and 8-12 Under 35 U.S.C. §103(a)

Claims 1-6 and 8-12 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent No. 64- 01-060679. The Examiner has stated that JP '679 is drawn to a formulation obtained from at least one epoxy resin including bisphenol A epoxy resin and a reaction product of an epoxy resin and a carboxyl-terminated butadiene-acrylonitrile copolymer, and a carboxyl-containing acrylonitrile copolymer. The Examiner contends that it would have been obvious to employ a blend of a bisphenol A epoxy resin and an epoxy resin-CTBN reaction product since JP '679 is open to mixtures of epoxy resins in order to enhance the toughness which is an inherent feature of CTBN.

Applicants respectfully traverse the rejection. Even if a blend of a bisphenol A epoxy resin and an epoxy resin-CTBN reaction product were taught or suggested by JP '679, the resulting composition would not be that claimed by Applicants. The reactive polymer (b) of Applicants' claimed invention comprises a liquid carboxyl-terminated butadiene-acrylonitrile copolymer. JP '679 discloses a composition comprising Nipol 1072, which is a solid acrylonitrile copolymer containing carboxy groups. (See US2004/0214007 at page 5, paragraph [0071], attached for the Examiner's convenience.) Because JP '679 does not disclose,

teach or suggest the curable composition claimed by Applicants, Applicants respectfully request the withdrawal of the rejection of claims 1-3, 8-9 and 11 under 35 U.S.C. §103(a).

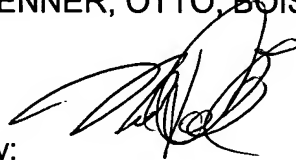
### **Conclusion**

In view of the foregoing remarks and amendment, Applicants respectfully request reconsideration and a timely issuance of a notice of allowance for claims 1-3, 8-9 and 11.

In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to our Deposit Account No. 18-0988 under Attorney Docket No. **BFGRP0313USB**.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP



By: \_\_\_\_\_

Neil A. DuChez  
Reg. No. 26,725

1621 Euclid Avenue  
19<sup>th</sup> Floor  
Cleveland, Ohio 44115-2191  
(216) 621-1113